

### Case Report

## Peripheral ossifying fibroma of the anterior maxillary gingiva

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### ABSTRACT

**Background:** Peripheral ossifying fibroma is a rejuvenation of the reactive gingiva, usually occurring in the anterior maxillary gingiva. The condition is often clinically ambiguous when diagnosed on the basis of gingival hyperplastic lesions such as focal fibrous hyperplasia, peripheral giant cell granuloma, peripheral fibroma and pyogenic granuloma because peripheral ossifying fibroma has a tendency to recur with a ratio of around 20%. The literature on the subject predominantly classifies peripheral ossifying fibroma as an epulis type, but it has also been identified as a peripheral mesenchymal tumor presenting similar clinical symptoms to ossified fibrous epulis. **Purpose:** The purpose of this article is to explain the rare case of peripheral ossifying fibroma in the anterior maxillary gingiva which can be clinically misdiagnosed as reactive gingival hyperplastic lesions. **Case:** A case report of peripheral ossifying fibroma in the left lateral incisor and canine of the maxillary gingiva in a 26 year-old male. The patient chiefly complained of a painless, slow growing gingival enlargement on the upper left jaw during the previous five years. Clinical examination confirmed it to be a single, hard swelling in the 21-24 region, pale in color and with a rough surface. **Case management:** The procedure constituted a complete surgical excision of the lesion together with the underlying periosteum curettage intended to prevent recurrence. The histopathologic examination results indicated tissue with squamous epithelial lining, stroma consisting of fibroblasts, and immature trabecula with osteoblastic rimming between collagen tissue without signs of malignancy. Osteoblastic rimming has specific features in histopathologic examination of ossifying fibroma. **Conclusion:** Peripheral ossifying fibroma is a rare solitary enlargement in the oral cavity frequently misdiagnosed as ossified fibrous epulis. A definitive diagnosis is made by means of histopathologic examination. The condition has a low recurrence rate.

**Keywords:** gingival enlargement; gingival overgrowth; peripheral ossifying fibroma

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### INTRODUCTION

Peripheral ossifying fibroma is a non-encapsulated lesion consisting of fibrous tissue that contains a number of mineral-based materials that transform bones into ossifying fibroma.<sup>1</sup> The etiology and pathogenesis of ossifying fibroma is uncertain. A number of researchers assert that ossifying fibroma constitutes a neoplastic process, whereas others argue that this lesion represents a reactive process involving growth from periodontal ligament cells.<sup>2</sup> Peripheral ossifying fibroma has various names such as peripheral fibroma, cemento ossifying fibroma, peripheral odontogenic fibroma, and calcifying fibroblastic granuloma. It is one of the lesions that presents as a gingival

mass, usually emerging from interdental gingiva and, apparently, from the periodontal ligament.<sup>3</sup>

The pathogenesis of this lesion is uncertain. Peripheral ossifying fibroma is considered a reactive process, originating in the periosteal or periodontal membrane. It is also reported that this process constitutes a maturation of pyogenic granuloma or a peripheral giant cell granuloma.<sup>4</sup> Localized gingival enlargement generally leads to a reactive proliferation lesion rather than a neoplasm.<sup>5</sup> Reactive or inflammatory lesions represent more than 90% of histopathologically-analyzed gingival biopsies<sup>6</sup> and are generally included in the diagnosis of pyogenic granulomas, fibrous hyperplasia, peripheral ossifying fibromas and peripheral giant cell granulomas. However, certain authors

have stated that peripheral ossifying fibroma is a variant of central ossifying fibroma and, therefore, a neoplastic process.<sup>2,7</sup>

Clinically, the peripheral ossifying fibroma appears as a sessile or pedunculated nodular mass, usually less than 2 cm in size but which can occasionally reach 6 cm, reddish to pink in colour and, frequently, with an ulcerated surface.<sup>8</sup> In general, this is often found to occur at some point between birth and 20 years of age and predominantly in women. Low predilection of the maxilla and the incisive cusp region is also evident. According to the literature, peripheral ossifying fibroma constitutes a rare example in distribution cases of reactive hyperplasia depending on the type of lesion, with only two cases (1%) out of 197 reported in Tabriz University's Journal of Medical Sciences. Normal gingival growth is typically observed in the interdental papillae and consists of 9% of gingival growth. This case is more prevalent in adult females than males with the anterior maxillary region being the most frequently affected.<sup>9</sup>

In most cases, a radiograph confirms no involvement of bone.<sup>3</sup> However, in some cases, superficial bone erosion may occur. The lesion can be excised surgically and microscopic examination subsequently performed to confirm the diagnosis. Histopathological examination reveals stratified squamous epithelium and connective tissue in large numbers accompanied by fibroblast cell proliferation.<sup>6</sup> Calcification can be observed in connective

tissue in the form of interconnected bone and osteoid trabeculae, that part of soft tissue in central ossifying fibroma.<sup>10</sup> This report describes a case of peripheral ossifying fibroma in the maxillary gingiva of a 26-year-old male patient.

## CASE

A 26 year old male patient consulted the Oral and Maxillofacial Surgery Department at the Dental Hospital of Universitas Airlangga, complaining of having experienced gingival swelling in the upper anterior region. The growth of this lesion was initially limited and it had grown gradually to its present size over the course of 2-3 years. It constituted a hard solitary sessile gingival and non-ulcerated swelling with a rough surface normal in color for a gingiva and non-tender on palpation. The swelling, approximately 3x2x1 cm in size, extending from distal 21 tooth to distal 23 tooth, involving attached gingiva and marginal gingiva (Figure 1). The teeth in question were free of caries and calculus, while the panoramic radiograph indicated the absence of bone loss around the tooth (Figure 2). An expanded periodontal gap between the left central incisor and the lateral incisor was evident from the intraoral periapical radiographic view (Figure 3). The patient's medical and family history was non-contributory and his lifestyle was healthy.



**Figure 1.** Clinical appearance of gingival swelling with defined border from the 21-23 region with a rough surface and normal color of gingiva.



**Figure 3.** Periapical radiograph illustrating a widened periodontal space between teeth 21 and 22.



**Figure 2.** Panoramic view indicating normal appearance.

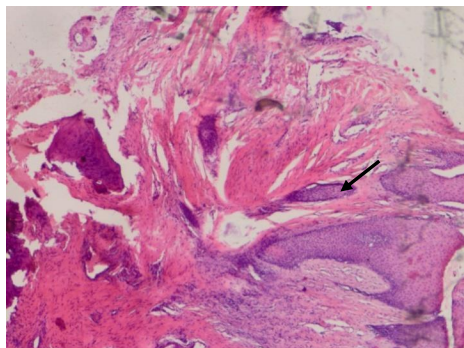
## CASE MANAGEMENT

Following administration of a local anaesthesia (2 ml Pehacain), a mucoperistial flap was created with a blade scalpel No.15 in the gingival margin of teeth 21-23. On excision of the bony lesion, including the rough and hardened gingiva, the lesion was found to be well demarcated from healthy bone (Figure 4). Both the bony and gingival lesions were sent for histopathologic examination. On wound closure, care was taken to maintain the normal gingival architecture of the cervical margin of 21-23 teeth by undermining and recontouring the flap margin which was to be attached to the cervical margin of 21-23 teeth and sutured appropriately with silk 3.0.

The diagnosis of peripheral ossifying fibroma was confirmed through histopathologic examination which indicated the presence of parakeratinized stratified squamous epithelium with stroma consisting of fibroblast and immature bone trabeculae. Osteoblastic rimming within collagen tissue was also observed which was a distinctive finding in ossifying fibroma (Figure 5). No malignancy was evident in the course of this examination. Based on these findings, a final diagnosis of peripheral ossifying fibroma was arrived at. The wound healed and an evaluation of the gingiva conducted six months after excision confirmed the



**Figure 4.** Intraoperative photograph confirming the lesion to be well demarcated from the healthy bone.



**Figure 5.** Histopathologic examination (black arrow indicating osteoblastic rimming within collagen tissue).

presence of normal contours without gingival recession that showed the marginal flap to be perfectly adapted to the cervical margin of 21-23 teeth (Figure 6). No recurrence occurred.

## DISCUSSION

Ossifying fibroma is a benign bone neoplasm with the potential for excessive growth, bone destruction, and recurrence. The etiology and pathogenesis of Peripheral Ossifying Fibroma remains undefined. Several researchers claim peripheral ossifying fibroma to be a neoplastic process, while others argue that it is a reactive process. This lesion results from damage to periodontal ligament cells.<sup>11,12</sup> The main causative factors in POF consist of chronic irritation and trauma, possibly originating in the subgingival plaque and calculus. In addition, the potential for this lesion to occur can also be related to the use of orthodontic devices as has been shown to be true of 3.8% of adult cases and 7% of pediatric cases.<sup>13</sup> Inflammatory hyperplasia of the periodontal ligament is a factor causing histogenesis in peripheral ossifying fibroma.<sup>8</sup> These clinical results include swelling of the gingiva, the proximity of the gingiva to the parodontal ligament, and the correlation of age distribution of lesions with the number of the lost teeth and their parodontal ligament. It is similar, if not identical, to cementifying fibroma both clinically and microscopically. Composed of a stroma of fibrous connective tissue in which new bone is formed, it is known as one of the benign fibro-osseous lesions affecting the jaw.<sup>14</sup>

Ossifying fibroma consists of craniofacial bone and is typically divided into the two groups of central and peripheral ossifying fibroma. The central group is formed from the endosteum or periodontal ligament which is associated with the apex and extends from the bone medulla, whereas the peripheral type indicates a relationship with periodontal ligaments which occur in soft tissue. Peripheral ossifying fibroma is not a peripheral part of central ossifying fibroma.<sup>12</sup>



**Figure 6.** Postoperative photograph six months after excision showing normal contours of the gingiva without recession indicating that the marginal flap was perfectly adapted to the cervical margin of teeth 21-23.



Ossifying fibroma is thought to originate in periodontal membrane tumors resulting from mesenchymal cell blasts, present in the periodontal membrane, which have the ability to produce cementum, alveolar bone and fibrous tissue. Based on its character, ossifying fibroma is also classified as falling within the neoplastic disease group with a low recurrence rate in general.<sup>15</sup> Fibrous connective tissue in the periodontal membrane is composed of collagen fibers, mucopolysaccharides and oxytalan fibers. Ossifying fibromas occur in both central and peripheral locations of the jaw bones. Histologically, the lesion is composed of varying amounts of mature and immature bony trabeculae, cementum-like tissue, dystrophic calcifications, all in different configurations with varied stromal collagen content and cellularity.<sup>11</sup>

Peripheral ossifying fibroma is a solid, slow-growing mass which can be either sessile or pedunculated. It is most often located in the gingival papilla between the teeth and maxilla, rather than the lower jaw within the anterior region or posteriorly, can occur at any age but particularly during the second decade of life, and predominantly affects women rather than men at a ratio of 3:2. The surface of this ossifying fibroma lesion is either smooth or ulcerated and reddish pink and measures approximately 1.5 cm in diameter, although lesions with a diameter of between 6 and 9 cm have also been reported. The pathogenesis of peripheral ossifying fibroma remains unclear, possibly originating from the periodontal ligament. The majority of peripheral ossifying fibromas occur in the gingiva (interdental papilla, proximal portion of the gingiva to the periodontal ligament, oxytalan fiber with mineralized matrix in certain lesions, age distribution related to the number of permanent teeth lost, and fibrocellular response in the periodontal ligament).<sup>3</sup> Ossifying fibroma can be caused by local trauma or irritation such as dental plaque, calculus, microorganisms, masticatory force, ill-adjusted dentures or inadequate restoration. The influence of hormones is also likely to be a causative factor in women.<sup>2,6</sup>

The prevalence of peripheral ossifying fibroma recurrence is between 8 and 20 percent. Surgical excision may be the treatment of choice after removing local causative factors such as plaque, calculus, ill-fitting dentures and poor reconstruction. Excision involves removing the ligament and periosteum at the base of the lesion in order to reduce the likelihood of recurrence.<sup>16</sup>

As in this case report, gingival mass suffered by the patient involves the marginal gingiva of 21-21 teeth without any local irritant from dental calculus or remaining sharp tooth root. The peripheral ossifying fibroma has numerous radiographic features. It has been observed that the radiographic calcification foci are dispersed in the central area of the class, but not all lesions exhibit radiographic calcifications. Radiographs indicate no presence of bone. Superficial bone degradation is found in rare cases.

Histopathological evaluation of biopsy specimens results in a definite diagnosis of peripheral ossifying fibroma. During microscopic examination, the following

characteristics are usually observed: intact or ulcerated stratified squamous surface epithelium; potentially mature mineralized material; epithelial proliferation ranging from sparse to abundant; benign fibrous connective tissue with varying fibroblast content; myofibroblasts and collagen; lamellar or woven osteoid; and cement-like material or dystrophic calcifications; while acute and chronic leukocytes are also identified. The results of histopathologic examination in this case produced consistent findings with peripheral ossifying fibroma in the form of parakeratinized stratified squamous epithelium with stroma consisting of fibroblast and immature bone trabeculae. Osteoblastic rimming within collagen tissue was also observed. No malignancy was evident during this examination.

The characteristic of this pattern occurs only in large lesions that form fibromic irritations or pyogenic granulomas. In most cases, radiology indicates no effect on bones, although their superficial erosion can be detected. The migration and mobility of adjacent teeth can also be observed.<sup>17</sup> It can be concluded that peripheral ossifying fibroma in the oral cavity is a rare, discrete swelling that has frequently been clinically diagnosed as ossified fibrous epulis. Histopathological research is essential for such lesions to be definitively diagnosed and treated. Although it has a low rate of recurrence, peripheral ossifying fibroma will require complete surgical excision, including the underlying periosteum, to prevent recurrence.

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